

Pappognatha Mickel (Hymenoptera: Mutillidae: Sphaerophthalminae): New Species, Sex Associations, Hosts, and New Distribution Records

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Abstract.—Two new species of *Pappognatha* are described: *P. panamensis* Quintero and Cambra, male and female, from Panama, and *P. peruana* Quintero and Cambra, male, from Peru. The previously unknown males of *Pappognatha myrmiciformis* (Cameron, 1897) and *Pappognatha patruelis* (André, 1898) are described, bodies and genitalia are illustrated. *Pappognatha patruelis* is reported as a parasitoid of *Euglossa* sp. (Apidae). New country records are presented for the following four species: *P. speciosa* Mickel, 1939, Colombia and Ecuador, previously known from Peru; *P. egregia* Mickel, 1939, Colombia and Ecuador, previously known from Brazil; *P. obliqua* Mickel, 1939, Peru, previously known from Brazil; *P. myrmiciformis*, Honduras, previously known from Panama and Costa Rica. Honduras represents the northernmost distribution record for this Neotropical genus.

Pappognatha Mickel, 1939, is a Neotropical genus of mutillid wasps, erected to comprise 13 species based on single-sex descriptions: 11 known only from females and 2 from males. Males of *Pappognatha* are rare in collections, a total of five specimens having been reported in the literature: two of *P. obliqua* Mickel, 1939, one of *P. carmo* (Cresson, 1902), and two of *Pappognatha* sp. (Quintero and Cambra 1996). Females are more common, but relatively scarce in reference collections; only 50 female specimens with locality records have been cited in the literature (Mickel 1939, Cambra and Quintero 1992, Yanega 1994, Quintero and Cambra 1996). *Pappognatha* larvae parasitize immature *Euglossa* bees (Roubik 1989). Yanega (1994) reports two findings of *Pappognatha myrmiciformis* as a parasitoid of *Euglossa dodsoni* Moure in Costa Rica and one record of *Pappognatha speciosa* Mickel as a parasitoid of *Euglossa intersecta* Latreille that had nested inside an aerial termite nest in Iquitos, Peru. No additional hosts are known for *Pappognatha* and apparently their parasitism is restricted to bees of the genus *Euglossa*. The development of strong mandibles (Figs. 5–

7) in both sexes of *Pappognatha* is probably an adaptation to tear open and exit the hard resin nests of *Euglossa* by the newly eclosed adults.

Because of the great resemblance between *P. myrmiciformis* and the ant *Camponotus sericeiventris* Guérin-Ménéville some authors (e.g. Wheeler 1983) assumed erroneously that the mutillid was a parasitoid or a brood parasite of that ant (Brothers *et al.* 2000).

Mickel (1939) suggested two possible sex associations, based on distribution and collection data: *P. carmo* (Cresson), probably the male of *P. lauta* (Mickel), from Santarem, Brazil; and *P. obliqua* Mickel, probably the male of *P. pertyi* (Dalla Torre), from Para, Brazil.

Here we describe two new species of *Pappognatha*; one of them being the first to be described from both sexes. We also describe the previously unknown males of *P. patruelis* (André, 1898) and *P. myrmiciformis* (Cameron, 1897), and provide an illustrated key to the six species known from males. We present four new country records and the first host record for *P. patruelis*. We have examined new material of

Pappognatha (46 females and 8 males), bringing the total of currently recorded *Pappognatha* to 94 females and 13 males.

Acronyms for institutions where specimens are deposited are: American Museum of Natural History, New York (AMNH); Museo de Invertebrados G. B. Fairchild, Universidad de Panama (MIUP); Instituto Nacional de Biodiversidad, Costa Rica (INBio). The abbreviations T and S are used for tergum and sternum, respectively.

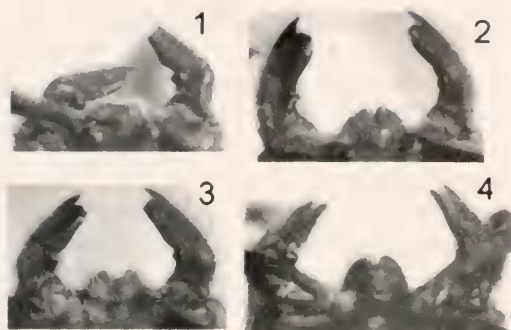
Pappognatha Mickel

Pappognatha Mickel 1939: 330–331. Type species: *Mutilla pertyi* Dalla Torre, 1897, by original designation.

Diagnosis.—*Pappognatha* is the only genus of New World Mutillidae that has males and females with entirely tomentose mandibles, the tomentum consisting of short recumbent pubescence, except for the glabrous tips (Mickel 1939). Both sexes have large quadrate heads, broader than the mesosoma, black integument (except T2 maculations in females) and are about equal in body length (11–14 mm). The males have parameres (Figs. 11, 12) straight, broadest at the base, narrowing towards the apex, triangular in lateral view; volsella (Fig. 13) with cuspis stout, broad and somewhat flattened, with rounded apex; digitus short and stout; penis valve (Fig. 14) without preapical tooth.

KEY TO MALES OF *PAPPOGNATHA* MICKEL

1. Clypeus anterior margin broadly nasutiform, with median U-shaped emargination (Figs. 3, 4) 2
- Clypeus with broad anterior projection, with either shallow concavity or V-shaped emargination in the middle of anterior margin (Figs. 1, 2) 5
2. Vertex mostly covered with sparse black setae; clypeus middle emargination about ¼ clypeus length 3
- Vertex mostly covered with sparse pale setae; clypeus middle emargination deeper, nearly ⅓ clypeus length 4
3. Clypeus as in Fig. 3; mandible at base with broad, triangular, laminar ventral process (Fig. 5); tibial spurs of mid- and hind legs brown; Central America *myrmiciformis* (Cameron)
- Clypeus as in Fig. 4; mandible at base with a broad, rounded, laminar ventral process (Fig. 6); tibial spurs of mid- and hind legs pale; Brazil *patruelis* (André)
4. Mesosternum with distinct, slightly transverse tubercle in front of each middle coxa; anterolateral area of T2 with distinct spot of appressed, pale setae; Brazil *carmo* (Cresson)
- Mesosternum with distinct, oblique ridge in front of each middle coxa, inner end of ridge almost reaching the margin of coxal cavity; anterolateral areas of T2 with sparse, erect, pale setae; Brazil, Peru *obliqua* Mickel
5. Clypeus anterior margin with shallow concavity, without V-shaped emargination medially (Fig. 1); mandible at base with broad, triangular, laminar ventral process (as in *myrmiciformis*, Fig. 5); vertex and T3–4 with mostly black setae; dorsoanterior area of propodeum with pale setae, sculpture visible; tibial spurs of mid- and hind legs dark brown to black; Panama *panamensis* n. sp.
- Clypeus anterior margin convex, with shallow, V-shaped emargination medially (Fig. 2); mandible at base with reduced laminar ventral process (Fig. 7); vertex and T3–4 mostly covered with dense, pale setae; dorsoanterior area of propodeum covered with very dense pale setae, sculpture not visible; tibial spurs of mid- and hind legs pale; Peru *peruana* n. sp.



Figs. 1–4. *Pappognatha*, male clypeus, dorsal view. 1, *panamensis*. 2, *peruana*. 3, *myrmiciformis*. 4, *patruelis*.

Pappognatha panamensis Quintero and Cambra, n. sp.
(Figs. 1, 11–14, 16)

Pappognatha sp., female: Cambra and Quintero (1992:473); *Pappognatha* n. sp., female: Yanega (1994).

Male.—Integument black. **Head:** very large, quadrate, slightly broader than long; gena, frons, clypeus and mandible with pale setae; vertex with black setae; clypeus broadly concave on anterior margin (Fig. 1); mandible at base with broad, triangular, laminar ventral process; flagellomere I 1.5× as long as flagellomere II; frons and vertex with medium-sized punctures, most spaces between punctures usually equal to their diameter; ocelli small, distance between inner eye margin and lateral ocellus approximately 6× greatest diameter of the latter. **Mesosoma:** with pale setae, except mesonotum, tegula and anterior half of scutellum with black setae; pronotum, mesonotum and scutellum with dense, closely-spaced punctures; propleuron with scattered, small punctures; dorsal and ventral areas of mesopleuron convex, separated by deep groove, elevated areas with medium-sized punctures, anterior and posterior areas practically impunctate; metapleuron impunctate; propodeum reticulate; scutellum convex; mesosternum with distinct protuberance or tubercle in front of each mid-

coxa. **Legs:** with pale setae, apical tarsomere produced into short lamellate plate covering claw bases; tibial spurs of mid- and hind legs dark brown to black. Wings (as in Fig. 9) infuscated, except basal and subbasal cells with clear area on basal half; stigma poorly developed; marginal cell large, truncate apically; two submarginal cells and traces of a third (as in Fig. 9). **Metasoma:** with pale setae on: dorsal face of T1, lateral margin of T2, very small lateral area of T3 and T4, all sterna except S7; black pubescence on: remainder of T2, other terga, and S7; anterior face of T1 glabrous, impunctate, with conspicuous medial tooth on each lateral margin; T2 with medium-sized punctures laterally, somewhat smaller at the posterior margin, disk glabrous and with punctures scattered; T3 to T6 and S3 to S6 with dense, small punctures interspersed; S2 gibbose anteriorly at the middle, with sparse small punctures. Parameres (Figs. 11, 12) broad at base, narrowing toward apex, triangular in lateral view, with dense large setae on basal two-thirds of ventral margin; volsella (Fig. 13) with cuspis stout, broad and somewhat flattened, with rounded apex, covered with setae that are larger toward apex; digitus short, stout; penis valve as in Figure 14. Length: 10.5 mm.

Female.—Integument black, except T2 with pair of yellow integumental spots. **Head:** frons, vertex and gena with black setae, remainder with thin pale pubescence and scattered, erect, pale setae; frons and vertex densely, distinctly punctate; gena with distinct, separated punctures. **Mesosoma:** dorsum with black setae, except anterior margin of pronotum with pale pubescence, mesonotum with broad, transverse band of pale pubescence interrupted medially by very fine black pubescence, propodeum with lateral pale-pubescent stripe, pleural areas entirely pale pubescent; pronotum and mesonotum with medium-sized, closely-spaced punctures; propleuron with medium-sized, separated punctures; meso- and metapleur-

ron almost smooth; side of propodeum with medium-sized, separated punctures. **Legs:** hind tibia externally with series of three short spines, apical spine at tip of long, conical process; lamellate process of apical tarsomere not emarginate medially; tibial spurs pale. **Metasoma:** T1 with pale pubescence, except anterior face with median triangular area of black pubescence, extending slightly onto dorsal face; T2 with pair of posteromedian, yellow, almost circular integumental spots (Fig. 15), separated by distance almost equal to their diameter; T2 with black setae, except for sparse, pale pubescence on integumental spots, and broad pale pubescence along lateral margin; T3 to T5 with pale pubescence, interrupted medially by narrow black line; sterna with pale setae. Length: 10.6–14 mm (n = 12).

Holotype: male.—**PANAMA:** Darien Province: Parque Nacional Darien, Estacion Rancho Frio, Pirre, 80m, 16 Nov 2000–17 Jan 2001, R. Cambra, A. Santos (MIUP), Malaise trap. Paratypes (12 females): Parque Nacional Darien, Pirre Station, 100m, 16 Feb 1989, D. Roubik, 1 ♀ (MIUP); Parque Nacional Darien, Cana—Cerro Pirre trail, 750m, 10 May 2002, D. Curoe, 1 ♀ (MIUP). Colon Province: Donoso, Cuatro Callitas, 21–26 Jul 2001, P. Gonzalez, 1 ♀ (MIUP); Piña, Area Protegida San Lorenzo, 5 Sep. 2000, S. Bermudez, 1 ♀ (AMNH). Panama Province: 9 km N. El Llano, 29 May 1991, F. Hovore, 1 ♀ (MIUP); 2 km E. Altos de Utive, Pacora, 800m, 11 Feb 1998, R. Cambra, 1 ♀ (MIUP); Capira, Jordanal, 27–30 Jan 2002, P. Gonzalez, 1 ♀ (MIUP). Comarca Kuna Yala: Nusagandi, 16 Jan 1991, R. Cambra, 1 ♀ (MIUP). Coclé Province: Valle de Anton, 22 Aug 1991, R. Contreras, 1 ♀ (MIUP); El Cope, Division Continental, 900m: 1–2 Sep 1990, D. Quintero, 1 ♀ (MIUP); 1 nov 1992, A. Aiello, 1 ♀ (MIUP). Chiriqui Province: Fortuna, Quebrada Arena, 1050m, 8–11 Apr 1999, R. Cambra, A. Santos, 1 ♀ (MIUP).

Diagnosis.—The male of *P. panamensis* differs from the other species of the genus by the shallow concavity on the anterior margin of the clypeus, without a medial emargination. The males of *P. panamensis* and *P. myrmiciformis* are the only known *Pappognatha* with brown to dark brown tibial spurs on mid- and hind legs. The female of *P. panamensis* is similar to *P. pertyi*

(Dalla Torre) from Brazil but differs in the totally black vertex; the mesonotum with a broad, transverse band of pale pubescence, narrowly interrupted medially by a line of black pubescence; and T3–5 with pale pubescence, narrowly interrupted medially by a line of black pubescence. The female of *P. pertyi* has the vertex with an inconspicuous V-shaped spot of pale pubescence; the mesonotum with a transverse band of pale pubescence widely interrupted medially by black pubescence; and T3–5 with pale pubescence, widely interrupted medially by black pubescence.

Pappognatha peruana Quintero and Cambra, n. sp.
(Fig. 2, 7, 8)

Pappognatha sp.: Quintero and Cambra (1996: 339)

Male.—Similar to *Pappognatha panamensis* but differing by: clypeus broadly nasutiform, anterior margin convex and with minute, shallow, V-shaped emargination medially (Fig. 2); mandible (Fig. 7) at base with reduced laminar ventral process; vertex with dense pale pubescence, except area around ocelli with black pubescence; dorsoanterior area of propodeum covered with dense pale pubescence, sculpture not visible; T3 and T4 covered with pale pubescence, except small medial area with black pubescence; tibial spurs of middle and hind tibiae pale. Length: 12 mm.

Holotype: male.—**PERU:** Madre de Dios Departamento, Reserva Manu, Estacion Pakitza, 9 Mar 1992, D. Quintero (MIUP). Paratype: same data as holotype but 26 Feb 1992, R. Cambra, 1 ♂ (MIUP).

Diagnosis.—*Pappognatha peruana* differs from the other species of the genus in having a shallow V-shaped emargination on the anterior margin of the clypeus, and by the reduced basal ventral laminar process on the mandible.

Comments.—The holotype was collected resting on a leaf of a shrub about 1m above the ground inside the forest, at about 1600 hours. The paratype, collected

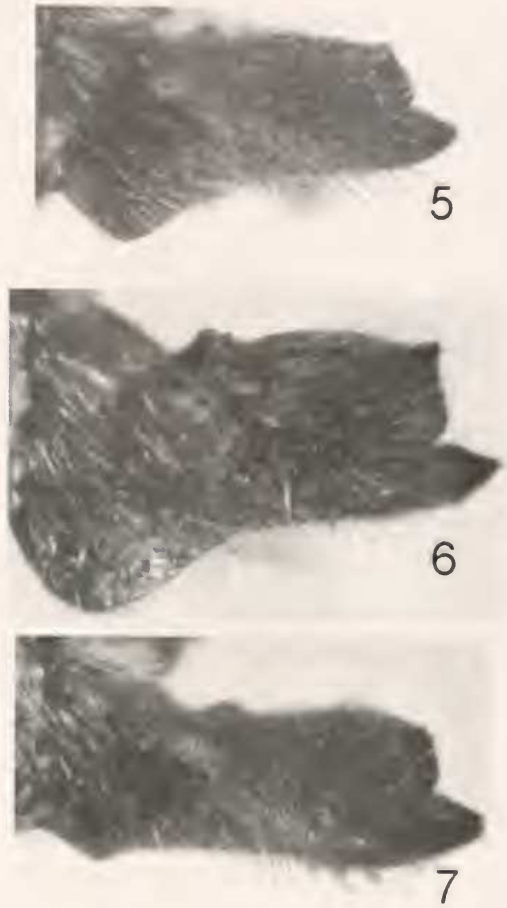
with an insect net, was flying about 3m above the muddy soil of a narrow forest trail, at noon. This is probably the male of either *P. speciosa* Mickel or *P. limes* Mickel. One female of the former was collected in Estacion Pakitza (Quintero and Cambra 1996). The latter species is known from similar habitats in Peru and Ecuador, and might be a junior synonym of *P. rotifera* (Gerstaecker, 1874), from Colombia. Thus, at present it is best to treat these males as a new species until additional evidence is available.

Pappognatha myrmiciformis
(Cameron, 1897)
(Figs. 3, 5, 9, 10, 15)

Male.—Similar to *P. panamensis* but the clypeus has a deep, rounded emargination medially, the depth of which is one third the length of the clypeus (Fig. 3), and the penis valve in a lateral view (Fig. 15) has a sharp angulation in its anterior margin near the base of the apical tooth. Length: 10–10.5 mm.

Material examined.—The specimen from Honduras represents a new country record and the northernmost record for this Neotropical genus.

HONDURAS: Atlantida, Lancelilla, Tela, 15 May 1995, R. Cave, 1♀ (MIUP). **COSTA RICA, Limon** Province: Sector Cerro Cocori, Finca de E. Rojas, 150m, 26 Mar – 24 Apr 1992, F. Quesada, 1♀ (INBio); Cerro Tortuguero, 1–120m, Jul 1993, R. Delgado, 1♀ (MIUP). **Heredia** Province: Estacion El Ceibo, Parque Nacional Braulio Carrillo, 400–600m, Nov. 1989, R. Aguilar, 1♀ (INBio); Feb 1990, C. Chaves, 1♂ (MIUP); Estacion Magsasay, Parque Nacional Braulio Carrillo, 200m, Mar 1991, A. Fernandez, 1♀ (INBio). **Guanacaste** Province: Estacion Pitilla, 700m, 9 km S Sta. Cecilia, Nov 1988, 1♀ (INBio); same data, Mar 1995, P. Ríos, C. Moraga (Malaise), 1♀ (INBio); same data, May 1989, I. Gauld, 1♀ (INBio); Estacion Maritza, 600m, lado O. volcan Orosi, Feb.1992, F. Araya, 1♀, 1♂ (INBio). **Puntarenas** Province: Golfito, Reserva Forestal Golfo Dulce, Estacion Agujas, 250–350m, 17 Mar 2000, A. Azofeifa, 1♀ (INBio); Golfo Dulce, 24 km Piedras Blancas, 2 Jun–Aug 1989, P. Hanson, 1♀ (British Museum of Natural History). **Alajuela** Province: San Cristobal, 600–620m, 15–28 Mar 1998, F. Quesada, 1♀ (INBio). **Guanacaste** Province: sotobosque, W. side volcan Cacao, 1100m, Feb 1989, I.



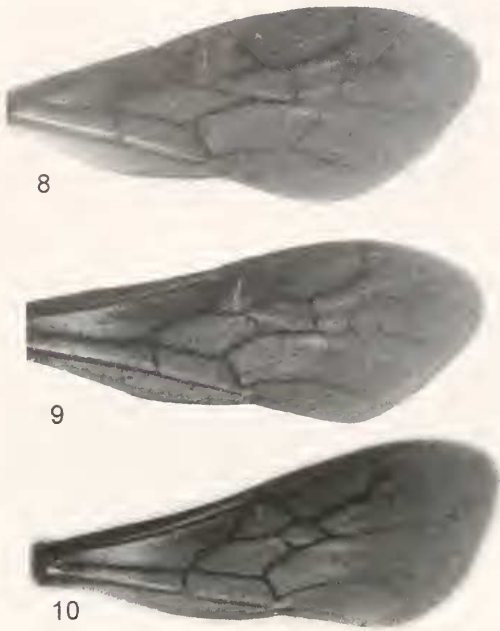
Figs. 5–7. *Pappognatha*, male mandibles. 5, *myrmiciformis*. 6, *patruclis*. 7, *peruana*.

Gauld, 1♀ (MIUP). **PANAMA, Coclé** Province: Penonome, cabecera Rio Riecito with Quebrada Platana [8° 52' 44", 80° 16' 38"], 110msnm, 22 Jun 2001, C. Vega, 1♀ (MIUP). **Darien** Province: Parque Nacional Darien, Estacion Rancho Frio, Pirre, 80m, 30 Jul – 8 Aug 2002, A. Santos, R. Miranda, 1♀ (MIUP). Other females from Panama were examined by Cambra and Quintero (1992), and Yanega (1994).

Distribution.—Honduras, Costa Rica and Panama.

Comments on sex association.—Extensive samples show the presence of only one species of *Pappognatha* in Costa Rica, and the capture of male and female at the same place and time support the association.

Comments.—The male specimen from Guanacaste, Est. Maritza, Feb.1992, has an



Figs. 8–10. *Pappognatha*, right wings. 8, *peruana*. 9–10, *myrmiciformis*.

aberrantly shaped second submarginal cell (SM2) on the right wing (Fig. 10). The left wing on the same specimen and the wings of the other male specimen of *P. myrmiciformis* examined (Fig. 9) have typical pentagonal SM2, as do all other male *Pappognatha*.

Pappognatha patruelis (André, 1898)
(Figs. 4, 6)

Male.—Integument black. **Head:** very large, quadrate, slightly broader than long; gena, frons, clypeus and mandible with pale setae; vertex with black setae; anterior margin of clypeus broadly nasutiform, with median U-shaped emargination (Fig. 4); mandible at base with broad, rounded, laminar ventral process; flagellomere I 1.5X as long as flagellomere II; frons and vertex with medium-sized punctures, most spaces between punctures usually less than their diameters; ocelli small, distance between inner eye ocellus and lateral ocellus approximately equal to the greatest diameter of the latter. **Meso-**

soma: with pale setae, except pronotum, mesonotum, tegula and anterior half of scutellum with black setae; pronotum, mesonotum and scutellum with dense, closely-spaced punctures; propleuron with scattered, small punctures; dorsal and ventral areas of mesopleuron convex, separated by deep groove, elevated areas with medium-sized punctures, anterior and posterior areas practically impunctate; metapleuron impunctate; propodeum reticulate; scutellum convex. **Legs:** with pale setae; apical tarsomeres segment produced into short lamellate plate covering the claw bases; tibial spurs of mid- and hind legs pale. **Metasoma:** with pale setae on: dorsal face of T1, lateral margin of T2, very small lateral area of T3 and T4, all sterna except S7; black pubescence on: remainder of T2, other terga, and S7; anterior face of T1 glabrous, impunctate, with conspicuous medial tooth on each lateral margin; T2 with medium-sized punctures laterally, somewhat smaller along posterior margin, disk glabrous and with punctures scattered; T3 to T6 and S3 to S6 with dense, small punctures interspersed; S2 gibbose anteriorly at the middle, with sparse small punctures. Parameres broad at base, narrowing toward apex, triangular in lateral view, with dense large setae on basal two-thirds of ventral margin. Length: 11.8 mm.

Diagnosis.—*P. patruelis* closely resembles *P. panamensis* and *P. myrmiciformis* but differs by: the shape of clypeus (Fig. 4); rounded basal laminar process on mandible (Fig. 6); frons and vertex with dense punctures, most spaces between punctures usually less than their diameter; pale calcaria of mid- and hind tibia.

Material examined.—BRAZIL: Bahia: Ilheus, Jan 1994, J. Franco, 1♀ (MIUP). Minas Gerais: Caratinga, Fazenda Montes Claros [19° 45' S, 41° 50' W], 30–31 Dec 1994, G. Melo, "Nascida de ninho de *Euglossa* sp. dentro de orifício em tronco no chão em decomposição", 2♀, 1♂ (MIUP).

Distribution.—Brazil.

Comments on sex association.—Two fe-



Figs. 11–15. *Pappognatha*, male genitalia. 11–14. *P. panamensis*: 11–12: parameres: 11, dorsal view; 12, lateral view; 13, volsella, lateral view; 14, penis valve, lateral view. 15. *P. myrmiciformis*, penis valve, lateral view. Abbreviations: C, cuspis; P, paramere.

males and one male were reared from three cells of one nest of *Euglossa* sp. The females fit the description of *P. patruelis* (André) given by Mickel (1939) who examined eight females, from Bahia (including the holotype and a paratype), São Paulo and Espírito Santo, Brazil. The male of *P. patruelis* is here described for the first time, based on a single male that died at the teneral stage; its wings were not extended and the mesosternum was not sclerotized and was deformed (concave).

Pappognatha speciosa Mickel, 1939
(Fig. 16)

Material examined.—The specimens from Colombia and Ecuador represent new country records.

COLOMBIA: Amazonas, P.N. Amacayacu, 290m,

30 Feb 1988, 1 ♀ (AMNH). ECUADOR: Oriente, Limoncocha (00°24'S, 76°36'W), 21 Jul 1970, C. W. Rettenmeyer, 1 ♀ (Brothers pers. col.). PERU: 3 ♀, Quintero and Cambra (1996).

Distribution.—Colombia, Ecuador and Peru.

Comments.—The female from Ecuador has the integumental spots darkish yellow, and the pale pubescence on T3–5 not interrupted with black (Brothers, pers. comm.); the type specimen has integumental spots ferruginous and pale pubescence on T3–5 narrowly interrupted medially with black. Mickel (1939) mentioned that *P. speciosa* is similar to *P. egregia*, but differs only in the size of the integumental spots of T2 (larger in *egregia*), and in the outer margin of the spots having pale tomentose pubescence (glabrous in *egregia*). In specimens of *P. myrmiciformis* and *P. patruelis* that we have examined, as well as in many other species in different mutillid genera (e.g., *Pseudomethoca* and *Hoplomutilla*), the integumental spots on T2 are quite variable in size. Thus, we consider the size of the integumental spots on T2 to be an unreliable character for species identification. Thus, *egregia* and *speciosa* might represent but a single species. In addition, *Pappognatha torquata* Mickel, 1939, might be conspecific with *P. speciosa* but *P. torquata* is known only from the holotype from Bolivia (no additional label data). According to Mickel (1939), they differ in having the pronotum pubescence entirely pale tomentose in *P. torquata* and the pronotum clothed with sparse, black setae in *P. speciosa*, and the dense pale pubescence on the vertex extending anteriorly along the inner margin of the eye in *P. torquata*, but not in *P. speciosa*.

Pappognatha egregia Mickel, 1939

Material examined.—The specimens from Colombia and Ecuador represent new country records.

COLOMBIA: Amazonas, Puerto Santander, 160m, 7 Sep 1991, 1 ♀ (AMNH); Meta, Villavicencio, 25 Jul 1938, 1 ♀ (MIUP); Putumayo, Santa Rosa, Río San Mi-



Figs. 16–17. *Pappognatha* females, habitus. 16. *P. panamensis*. 17. *P. speciosa*.

guel, 1–30 Oct 1970, Malkin, 1 ♀ (MIUP). **ECUADOR:** Napo: Cuyabeno, Apr 1986, 1 ♀ (MIUP); Cuyabeno, Aug 1983, 400m, 1 ♀ (MIUP); El Reventador, May 1986, 1 ♀ (MIUP); Limoncocha, 24 Jun 1975, 1 ♀ (MIUP). **BRAZIL:** Amazonas: 60 km N. Manaus, 16 Aug 1991, G. Melo, 1 ♀ (MIUP); 1905, 1 ♀ (AMNH); Manaus, Reserva Ducke, 3 May 1968, 1 ♀ (MIUP).

Distribution.—Colombia, Ecuador, Brazil.

Pappognatha limes Mickel, 1939

Material examined.—**ECUADOR:** Pastaza, Cusuimi, Rio Cusuimi, 150 km SE of Puyo, 15–31 May 1971, B. Malkin, 1 ♀ (MIUP); Pastaza, Mera, Apr 2002, 1 ♀ (MIUP). **PERU:** Monson Valley, Tingo Maria, 11 Dec 1954, 1 ♀ (AMNH).

Distribution.—Ecuador and Peru.

Comments.—A female from Colombia (along margins of Rio Calima, Restrepo, Valle, 11 Feb 1984, MIUP) differs from the original description in having the pale pubescence on T3–T5, interrupted medially with black pubescence, as in typical *P. limes*, but the frons is covered with pale

pubescence, as in typical *P. rotifera* (Gerstaecker, 1874). We have identified this specimen as *P. rotifera*, and conclude that *P. limes* is probably a junior synonym of *P. rotifera*, a species previously known from only two specimens from Colombia, the holotype from Bogota and a second specimen from Muzo, Boyaca (Mickel 1939).

Pappognatha obliqua Mickel, 1939

Material examined.—The specimens represent a new country record.

PERU: Nauta, Amazonas, Carrasco col., 2 ♂ (AMNH, MIUP).

Distribution.—Peru and Brazil.

Comments.—The two additional males from Peru fit Mickel's description of *P. obliqua*. This might be the male of *P. pertyi* (Dalla Torre) (Mickel 1939), a species known from Para, Brazil.

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